Method and Apparatus for Programmable Generation of Traffic Streams

ABSTRACT OF THE DISCLOSURE

Methods and apparatus provide single or multi-port, flexible, cost-effective, built-in self-test capabilities for network communications equipment, such as for example switches, and programmably generate, and subsequently analyze, one or more sequences of test packets, wherein the test packets simulate at least two flows of traffic. Such test packets can have programmable headers, payloads, and duty cycle. A line card embodying the present invention may generate its own traffic pattern, which may be similar or identical, to traffic patterns observed on Internet backbones. These traffic patterns may contain a bimodal distribution of control packets interspersed with data packets wherein the control packets and data packets are relatively short and long respectively. A plurality of test packet generators/receivers can be deployed in a network communications device having a plurality of ports. In such a configuration, test generator/receiver is associated with each of the plurality of ports. Under software control, test packets can be sent from at least any one of the plurality of ports to at least any other one of the plurality of ports. In this way, an in-circuit testing procedure may be implemented without having to disconnect line cards from the switch and connect the switch to expensive external test equipment.